

WHAT IS CLAIMED IS:

1. A semiconductor device comprising:

a semiconductor element having an electrode;

5 a metal block having a first surface and a second surface opposite to said first surface;

an electrode terminal joined to said first surface of said metal block; and

a ceramic substrate joined to said second surface of said metal block and having metal layers formed on both surfaces,

10 wherein said semiconductor element and said electrode are joined to said first surface of said metal block through a jointing material.

2. The semiconductor device according to claim 1, wherein said metal layers formed on said both surfaces of said ceramic substrate are the same with each other in
15 thickness.

3. The semiconductor device according to claim 1, wherein

said semiconductor element includes a plurality of semiconductor elements;

20 said metal block and said ceramic substrate are separated per insulation unit of at least one of said plurality of semiconductor elements;

one of said metal block and said ceramic substrate is provided to be in corresponding to at least one of said plurality of semiconductor elements; and

another one of said metal block and said ceramic substrate extends over all of said plurality of semiconductor elements for forming said insulation unit.

4. The semiconductor device according to claim 1, wherein said metal block includes a surface having a region larger than that of said jointing material on a side opposite to said jointing material.

5 5. The semiconductor device according to claim 1, wherein
a gap between said metal block and said semiconductor element becomes wider
as a distance from a center of said semiconductor element becomes longer; and
said gap is filled with said jointing material.

10 6. A semiconductor device comprising:
a metal block having a first surface and a second surface opposite to said first
surface;
a semiconductor element joined to said first surface of said metal block through
a jointing material;
15 a resin insulating layer having a third surface and a fourth surface opposite to
said third surface, said third surface being joined to said second surface of said metal
block; and
a resin package for sealing said metal block and said semiconductor element,
wherein said fourth surface of said resin insulating layer is exposed, and
20 said resin insulating layer has an elasticity higher than that of said resin
package.

7. The semiconductor device according to claim 6, wherein said resin insulating
layer is made of a silicon resin including a ceramic material for filling said silicon resin.

8. The semiconductor device according to claim 6, wherein said metal block is provided per insulation unit of said semiconductor element.

9. The semiconductor device according to claim 6, wherein said metal block
5 includes a surface having a region larger than that of said jointing material on a side opposite to said jointing material.

10. The semiconductor device according to claim 6, wherein
a gap between said metal block and said semiconductor element becomes wider
10 as a distance from a center of said semiconductor element becomes longer; and
said gap is filled with said jointing material.

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